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COMPOSTING

Master's Final Project

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IMPLEMENTATION CENTER: MAYCO SCHOOL OF ENGLISH

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INTRODUCTION

This section contains the subsections of Abstract, Keywords, Justification, Objectives, Target population of this study, and Methodology.

Abstract.

ENGLISH:

This document includes the theoretical framework on which the design of the Didactic Unit is based, the Didactic Unit implemented, the results obtained, the analysis of the results, the conclusions reached and finally an evaluation of the work carried out.

The Didactic Unit entitled "Composting" aims for first and second-grade students to learn what compost is, how it is formed, and what it is for, in a practical way, through experimentation. The project includes a first theoretical lesson in which the bases of composting are explained, a second practical lesson in which the student makes his own composter, a third practical session in which the student collects the compost already formed and uses it to feed their garden and to plant a seed that they will see growth, and finally a fourth session in which an activity is carried out as an evaluation of the knowledge acquired and the acceptance of the activity.

ESPAÑOL:

En este documento se incluye el marco teórico en el que se fundamenta el diseño de la Unidad Didáctica, la Unidad Didáctica implementada, los resultados obtenidos de dicho proyecto de intervención educativa, el análisis de los resultados, las conclusiones alcanzadas y por último una evaluación del trabajo realizado.

La Unidad Didáctica titulada "Compostaje" pretende que los alumnos de primero y segundo de primaria aprendan qué es el compost, cómo se forma y para qué sirve, de una forma práctica, a través de la experimentación. El proyecto incluye una primera lección teórica en la que se explican los principios del compostaje, una segunda lección práctica en la que el alumno elabora su propia compostadora, una tercera sesión práctica en la que el alumno recoge el compost ya formado y lo utiliza para abonar su jardín y para plantar una semilla que verán crecer, y por último una cuarta sesión en la que se realiza una actividad a modo de evaluación del conocimiento adquirido y de la aceptación de la actividad.

Keywords.

Compost, Education, CLIL, Environment.

Compost, Educación, AICLE, Medio Ambiente.

Justification.

Numerous studies defend the advantages of regular exits from schools for students. These outings are known to provide an active and productive learning dynamic that, combined with classroom teaching, provides much better learning outcomes rather than mere classroom teaching.

On the other hand, it has been shown that activities carried out in a natural environment provide young people with capacities for self-management and emotional self-regulation, which helps them improve their mental and physical state.

This school year, due to the conditions caused by the Covid-19 pandemic, students from many schools have not been able to leave their centers. Is for this reason that it is decided to carry out an activity that encourages the exit of students from their classrooms to a natural environment, in turn complying with the Covid-19 save conditions.

The care of the natural environment is considered a transversal subject in the educational system, which means that it is expected to be incorporated naturally in the development of any subject. For this reason, it was decided to choose "Composting" as the main topic of the didactics unit, to foment the protection of the environment.

Objectives.

The objective of this didactic unit is that the students not only know what composting is but also know how it is created and they do it with their own hands. In this way, it is intended to achieve complete learning in which the student not only acquires knowledge but also skills and the ability to interrelate the knowledge.

Three main results are expected, one for each lesson completed.

In the first lesson it is expected to obtain a demonstration that the student has understood what composting is (a mental map of what compost is, how it is formed and what it is for), in the second lesson it is expected to obtain proof of the direct implication from the students in the realization of the compost (the correct creation of a mini-composter) and finally, in the last session it is expected to carry out a short survey in which it is verified what the student finally remembers of the activity (what knowledge the student finally obtain), and above all in which the student let the teacher know the satisfaction with the activity they have carried out.

Target population of this study.

This educational intervention project is intended for students by first and second grade of primary at the Mayco School of English educational center.

Students in first grade are between 6 to 7 years old and students in second grade are between 7 to 8 years old.

Mayco's students have an advanced understanding of the English language despite being Spain natives, because of the bilingual condition of the school.

Methodology.

The methodology used for the development of this educational intervention project is based on EXPERIMENTS.

An experiment is proposed for the students to be carried out by the end of the Didactic Unit.

In this case, is proposed the creation of compost using a mini composter made by the students themselves.

FRAMEWORK

In this section are collected the theoretical bases used to design the Didactic Unit called "Composting".

School Gardens in Education

This section deals the application of School Gardens in the educational.

History of School Gardens in Education:

During the Second Republic, many educational centers included School Gardens as part of their educational infrastructure, but until the end of the 20th century, they were isolated experiences that appeared thanks to the motivation and work of the educational community (teachers and AMPAS), which oversaw promoting the projects in their centers.

Starting in the 80s, school gardens began to spread throughout Spain, because environmental education began to play a relevant role in formal education. Since then, school gardens have become elements offered by some educational centers as part of their facilities, even if they were not used properly.

Agenda 21 was established at the United Nations Summit on Environment and Development held in Rio de Janeiro in 1992, where the document was signed by the 175 countries participating in the said summit. This agenda addresses issues of Education for Sustainability.

In 1994 the Aalborg Charter was signed, marking in Europe the beginning of cities committed to sustainability.

During the time that the General Organic Law of the Educational System was in force, dated October 3, 1990-2006 (LOGSE), Environmental Education had a transversal subject.

Characteristics of a transversal subject¹¹:

- They have an open character, that is, they are not an immovable set of teachings.
- Teachers have a special responsibility in their development
- Permeate the areas of the natural and social sciences of the curriculum.
- They have a treatment adapted to students with a higher level.
- They must be developed and shared jointly by all members of the educational community.
- They are contents of high social demand, they refer to conflicts and problems that affect humanity, nature, and the individual himself.
- Students have a special responsibility in their development.
- They require interdisciplinary work for their conceptual and didactic conformation.
- They have a strong attitudinal, normative, and values character, promoting the integral formation of the individual.
- They have a treatment adapted to the evolutionary characteristics of the students.
- Permeate language and mathematics areas of the curriculum.
- Permeate all areas of the curriculum.
- They have a treatment adapted to each stage (course/cycle).
- They are developed around the experiences of the students.
- They must be present at the levels of curricular planning: Center Educational Project (PEC), Stage Curricular Project, and specific programs elaborated by the teachers.

In 2003, the School Agenda 21 was created, so that during the 2007/2008 school year, more than half of the obligatory education centers joined the program.

Afterward, the LOE, Organic Law of Education 2/2006, implemented until the 2013/14 academic year, assumed that all the cross-cutting themes that appeared in the LOGSE were already integrated into the curriculum, and implicitly introduced education for a "Sustainable future".

Then the LOMCE -Organic Law for the Improvement of Educational Quality 8 / 2013-, follows in the wake of the LOE. Although the word Environmental Education does not appear directly in its writing, it continues to include this as education in values transversally integrated into the educational curriculum (as a transversal subject).

Although there were previous initiatives, it was from 2016 that specific educational programs on the subject of School Gardens began to appear, such as "Experiencias en torno al huerto ecológico como recurso didáctico y contexto de aprendizaje en la formación inicial de maestros de Infantil. Eugenio, M and Aragón, L. 2016".¹⁰ Also, National, Local and Regional initiatives that promote the School Gardens have emerged.

In October 2018, the I State Meeting of School Gardens was held, organized by "Germinando", a socio-environmental initiative.

Nowadays, at the regional level (Consejería de Educación, Universidades, Cultura y Deporte del Gobierno de Canarias), there are tools such as the "Red Canaria de Huertos Escolares Ecológicos" which constitutes << a community of practices and inter-center coordination that facilitates joint work and the exchange of experiences using the ecological school garden as a context of learning since it constitutes a pedagogical resource that interrelates the different curricular areas and favors the development of the different competencies >>¹². At the island level, there are also initiatives promoted by the Cabildo such as the "Red de Huertos Escolares de Tenerife".¹³

Influence of the SDGs (ODSs) on the development of School Gardens in Education:

Following the environmental objectives set by the European Union for this new decade and the Sustainable Development Goals (SDG) or "Objetivos de Desarrollo Sostenible (ODS)" in Spanish, it is expected that by the year 2030 all the countries belonging to the EU will be managing correctly their solid urban waste.

This fact includes the correct recycling process of products formed by; plastics (yellow container), papers and cardboard (blue container), glass (green container), organic matter (brown or orange container), and Remains (gray container). In addition to these containers, it is also expected that the clean points and containers for dangerous products (red container) are used correctly.



Illustration 1.- Different containers and the waste they should hold. Attention: The color of the containers destined for each waste is different in each country.

Is expected that through municipal projects and education at all levels (formal, informal, citizen education, etc.) all the cities and towns in Spain will be directly involved in achieving these objectives. Struggle to achieve more sustainable cities and towns, and resilient at the food, ecosystem, and energy levels. Studies assure that << (...) as established by UNESCO's Global Action Program on Education for Sustainable Development, education is essential to involve society in actions against the current socio-environmental crisis. >>⁴.

Here you can see the principal ODSs on which the didactic unit has been based:

11 CIUDADES Y COMUNIDADES SOSTENIBLES

El mundo cada vez está más urbanizado. Desde 2007, más de la mitad de la población mundial ha estado viviendo en ciudades, y se espera que dicha cantidad aumente hasta el 60 % para 2030.

Las ciudades y las áreas metropolitanas son centros neurálgicos del crecimiento económico, ya que contribuyen al 60 % aproximadamente del PIB mundial. Sin embargo, también representan alrededor del 70 % de las emisiones de carbono mundiales y más del 60 % del uso de recursos.

La rápida urbanización está dando como resultado un número creciente de habitantes en barrios pobres, infraestructuras y servicios inadecuados y sobrecargados (como la recogida de residuos y los sistemas de agua y saneamiento, carreteras y transporte), lo cual está empeorando la contaminación del aire y el crecimiento urbano incontrolado.

El impacto de la COVID-19 será más devastador en las zonas urbanas pobres y densamente pobladas, especialmente para el mil millón de personas que vive en asentamientos informales y en barrios marginales en todo el mundo, donde el hacinamiento también dificulta cumplir con las medidas recomendadas, como el distanciamiento social y el autoaislamiento.

El organismo de las Naciones Unidas para los alimentos, la FAO, advirtió de que el hambre y las muertes podrían aumentar de manera significativa en las zonas urbanas que no cuentan con medidas para garantizar que los residentes pobres y vulnerables tengan acceso a alimentos.

12 PRODUCCIÓN Y CONSUMO RESPONSABLES

El consumo y la producción mundiales (fuerzas impulsoras de la economía mundial) dependen del uso del medio ambiente natural y de los recursos de una manera que continúa teniendo efectos destructivos sobre el planeta.

El progreso económico y social conseguido durante el último siglo ha estado acompañado de una degradación medioambiental que está poniendo en peligro los mismos sistemas de los que depende nuestro desarrollo futuro (y ciertamente, nuestra supervivencia).

Estos son algunos hechos y cifras:

- Cada año, se estima que un tercio de toda la comida producida (el equivalente a 1300 millones de toneladas con un valor cercano al billón de dólares) acaba pudriéndose en los cubos de basura de los consumidores y minoristas, o estropeándose debido a un transporte y unas prácticas de recolección deficientes.
- Si todo el mundo cambiase sus bombillas por unas energéticamente eficientes, se ahorrarían 120 000 millones de dólares estadounidenses al año.
- En caso de que la población mundial alcance los 9600 millones de personas en 2050, se podría necesitar el equivalente a casi tres planetas para proporcionar los recursos naturales necesarios para mantener los estilos de vida actuales.

La pandemia de la COVID-19 ofrece a los países la oportunidad de elaborar planes de recuperación que revertan las tendencias actuales y cambien nuestros patrones de consumo y producción hacia un futuro más sostenible.

El consumo y la producción sostenibles consisten en hacer más y mejor con menos. También se trata de desvincular el crecimiento económico de la degradación medioambiental, aumentar la eficiencia de recursos y promover estilos de vida sostenibles.

El consumo y la producción sostenibles también pueden contribuir de manera sustancial a la mitigación de la pobreza y a la transición hacia economías verdes y con bajas emisiones de carbono.

13 ACCIÓN POR EL CLIMA



El 2019 fue el [segundo año más caluroso de todos los tiempos](#) y marcó el final de la década más calurosa (2010-2019) que se haya registrado jamás.

Los niveles de dióxido de carbono (CO2) y de otros [gases de efecto invernadero en la atmósfera](#) aumentaron hasta niveles récord en 2019.

El cambio climático está afectando a todos los países de todos los continentes. Está alterando las economías nacionales y afectando a distintas vidas. Los sistemas meteorológicos están cambiando, los niveles del mar están subiendo y los fenómenos meteorológicos son cada vez más extremos.

A pesar de que se estima que las emisiones de gases de efecto invernadero caigan alrededor de un 6 % en 2020 debido a las restricciones de movimiento y las recesiones económicas derivadas de la pandemia de la COVID-19, esta mejora es solo temporal. [El cambio climático no se va a pausar](#). Una vez que la economía mundial comience a recuperarse de la pandemia, se espera que las emisiones vuelvan a niveles mayores.

Es necesario tomar medidas urgentes para abordar tanto la pandemia como la emergencia climática con el fin de salvar vidas y medios de subsistencia.

El [Acuerdo de París](#), aprobado en 2015, aspira a reforzar la respuesta mundial a la amenaza del cambio climático manteniendo el aumento global de la temperatura durante este siglo muy por debajo de 2 grados Celsius con respecto a los niveles preindustriales. El acuerdo también aspira a reforzar la capacidad de los países para lidiar con los efectos del cambio climático mediante flujos financieros apropiados, un nuevo marco tecnológico y un marco de desarrollo de la capacidad mejorado.

15 VIDA DE ECOSISTEMAS TERRESTRES



El brote de la COVID-19 resalta la necesidad de [abordar las amenazas a las que se enfrentan las especies silvestres y los ecosistemas](#).

En 2016, el Programa de las Naciones Unidas para el Medio Ambiente (PNUMA) alertó de que un aumento mundial de las [epidemias zoonóticas](#) era motivo de preocupación. En concreto, señaló que el 75 % de todas las enfermedades infecciosas nuevas en humanos son zoonóticas y que dichas enfermedades están estrechamente relacionadas con la salud de los ecosistemas.

«Con la COVID-19, el planeta ha enviado su mayor alerta hasta la fecha indicando que la humanidad debe cambiar», [ha explicado la Directora Ejecutiva del PNUMA, Inger Andersen](#).

En [Trabajar con el medio ambiente para proteger a las personas](#), el PNUMA detalla cómo «reconstruir mejor», mediante una base científica más sólida, políticas que contribuyan a un planeta más sano y más inversiones verdes.

La respuesta del PNUMA se ocupa de cuatro áreas:

1. Ayudar a las naciones a gestionar los desechos médicos de la COVID-19.
2. Producir un cambio transformativo para la naturaleza y las personas.
3. Trabajar para garantizar que los paquetes de recuperación económica creen resiliencia para crisis futuras.
4. Modernizar la gobernanza ambiental a nivel mundial.

Para prevenir, detener y revertir la degradación de los ecosistemas de todo el mundo, las Naciones Unidas han declarado la [Década para la Restauración de los Ecosistemas \(2021-2030\)](#). Esta respuesta coordinada a nivel mundial ante la pérdida y degradación de los hábitats se centrará en desarrollar la voluntad y la capacidad políticas para restaurar la relación de los seres humanos con la naturaleza. Asimismo, se trata de una respuesta directa al aviso de la ciencia, tal y como se expresa en el [Informe especial sobre cambio climático y tierra](#) del Grupo Intergubernamental de Expertos sobre el Cambio Climático, a las decisiones adoptadas por todos los Estados Miembros de las Naciones Unidas en las convenciones de Río sobre [cambio climático](#) [y biodiversidad](#) y a la [Convención de las Naciones Unidas para la Lucha contra la Desertificación](#).

Se sigue trabajando en un nuevo y ambicioso [Marco mundial de diversidad biológica posterior a 2020](#).

Mientras el mundo responde a la actual pandemia y se recupera de ella, necesitará un plan sólido destinado a la protección de la naturaleza, de manera que la naturaleza pueda proteger a la humanidad.

Application to the Didactic Unit "Composting"

Nowadays more and more people live in cities disconnected from agricultural and livestock life, and what is worse, today many students reach the fifth grade of primary school without knowing where a nut or a sausage comes from. Most of the students do not know what procedures have been necessary for its products to be consumed (or disregarded). Knowing the origin of the products helps to deserve them.

It is because of this fact that students should know that for a sausage to reach its plates, it has previously had to go through numerous processes, such as previous cooking, smoking, meat preparation, clinical analysis, killing an animal, feeding an animal, raising an animal, etc. It must also be known that all these processes require raw materials (such as cereals, fruit trees, water, etc.) and energy (the irrigation system, the maintenance of the enclosures where the animals live, the transport of the trucks that provide them food, the necessary energy in slaughterhouses, etc.).

But ... How can a student be asked to understand this whole process if they have never had contact with the agricultural and livestock world? How are we going to expect awareness in reducing consumption if the real cost of a product is unknown by the students? How is that child going to care about throwing the sausage, with just one bite, to the trash if he even does not know that an animal has had to die for it?

This is where the importance of school gardens in teaching is found. School gardens put students in contact with the agricultural environment, in a fun and aseptic way. It is intended to make students aware of the real cost of a product, in raw materials, energy (manual work of the farmer, machinery, etc.), and time.

The objective is to revalue the products of the land and the work involved in obtaining them, to later be able to move to the next level (animals intended for human consumption).

The idea of starting with composting instead of planting a vegetable is that students can see the end and the beginning of the process at the same time and can understand it as a potentially cyclical process. The beginning of a product for human consumption is to be produced (to be grown, collected, processed, and sold), while the end of a product for human consumption is to be ingested or thrown away. Through composting, waste is combined with production, creating a more sustainable cycle than the current one that we used.

Making students aware of these facts makes it easier to reach the 2020 and 2030 goals. School Agroecology is used as a theoretical framework << a school praxis centered on the school food system, which seeks the reappropriation by citizens (in this case the educational community) of participation in the system of production, transformation, and consumption of food >> ⁶.

School Gardens in CLIL

This section deals how to teach CLIL through School Gardens.

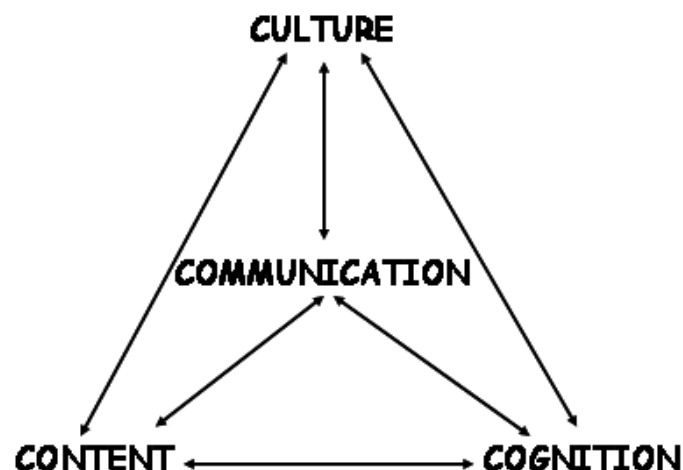
Theory of CLIL

It was David Marsh in 1994 who introduced the term CLIL (Content and Language Integrated Learning), later on, Steve Darn 2006 established his definition of CLIL, four years later in 2010, D.Coyle, P.Hood, and D. Marsh made the last definition of the CLIL concept.

D.Coyle, P.Hood, and D. Marsh 2010: "Content and Language Integrated Learning is a dual-focused educational approach in which additional language is used for learning and teaching of both content and language. That is, in the teaching and learning process, there is a focus not only on the content and not only on language"¹⁶.

The CLIL approach is based on four principles, the 4C's of CLIL¹⁵:

- Content: progression in knowledge, skills, and understanding related to specific elements of a defined curriculum.
- Communication: Students using a non-native language to communicate.
- Cognition: Developing thinking skills that link concept formation, understanding, and language.
- Culture: According to Coyle in Darn in 2006 "the exposure to alternative perspectives and shared understanding which deepen awareness of otherness and self".



School Gardens through CLIL

The selected subject area "Gardening and Composting" and the subject itself (Science) are some of the chosen areas for the implementation of CLIL.

When designing a class using the CLIL methodology, it is essential to pass the contents through a prior "optimization" process, through which the teacher selects the most appropriate content to be taught and how it should be developed (dynamization).

In this sense, the activities carried out in the School Gardens perfectly fit this definition. The activities carried out in the gardens are usually dynamic, manual, and experiential. Not only facilitates the understanding of the language by students but also the internalization of knowledge and the creation of a safe and comfortable environment for communication.

Several works relate outdoor activities to the CLIL methodology, most of them developed in other countries, such as the example of "*Gardening. It's sowing time! CLIL lesson plan. Gaia fagioli. Primary School Arca delle Colline. Santa Maria dell'Arzilla. Pesaro. Italy.*", but also some national ones, such as "*CLIL in the Woods: Indoor and outdoor approaches for teaching Health and Science. M^a Inés Sierra Mijares. Junio 2014.*".

Considering everything previously discussed, a Didactic Unit has been designed that collects the principles of the CLIL methodology and the advantages of teaching outdoors in a School Garden.

INTERVENTION

The educational intervention consists of 4 different parts or sessions; Class 1.- Composting, Class 2.- Mini composter, Class 3.- Composting in real life, and Class 4.- Satisfaction survey.

Class 1.- Composting.

Theory: What recycling is?

-Do you know what recycling is? Yes, you know, you are used to recycling, aren't you? You put the plastic into the yellow container and the papers into the blue container.

Game: Separate the garbage

-Let's see if you know which of these products are organic and which are inorganic! Do you know how to separate the rubbish? Let's check it.

Students will play the game in pairs with their tablets.



<https://learnenglishkids.britishcouncil.org/games/clean-and-green>

Video: Explaining composting process.

- Now... What do you do with the rest of the food that you don't want to eat, such as orange peel or banana peel?

- Do you know that you can do something different and better with these food scraps!? You can do COMPOST!!

What is the meaning of scraps? Food scraps are the same as leftover food such as orange peel or banana peel.

-Do you know what compost is? Do you know what it is using for? Do you have any ideas?

Let them propose ideas.

-Ok, we are going to watch this video and see if it can help us to know what the compost is.

Let the kids watch the video (5 minutes).



<https://www.youtube.com/watch?v=Q5s4n9r-JGU>

iPads activity:

Show kids the Mind Map of what they already watch in the video.

For first grade of primary:



For second grade of primary:



Explanation of the Mind Map step by step:

- ✚ I eat organic matter to get the nutrients to grow.
- ✚ I generate leftover organic matter that can be compostable or non-compostable.
- ✚ The compostable organic matter is eaten by decomposers animals, these animals are red worms, fungi and bacteria.
- ✚ The poop of these animals forms the compost.
- ✚ The compost is very good at helping plants grow big and strong.
- ✚ This whole process is called the decomposition process of organic matter.
- ✚ I can eat food that grows thanks to compost.

Students will be asked to make a Mind Map with their iPads by looking at the model on the board. Adding the related photographs by extracting them from the internet. To check what they have learned. The Mind Map on the board is only a guide, it is not expected they copy it.

They will use the app calls Popplet.



Experiment: Degradation process.

Finally, we are going to experiment. We are going to put a plastic item in pot number 1, a bone in pot number 2, and a piece of organic plant matter in pot number 3.

So that students can see with their own eyes what the degradation process is and the objects that easily degrade (compostable) and those that do not (non-compostable).



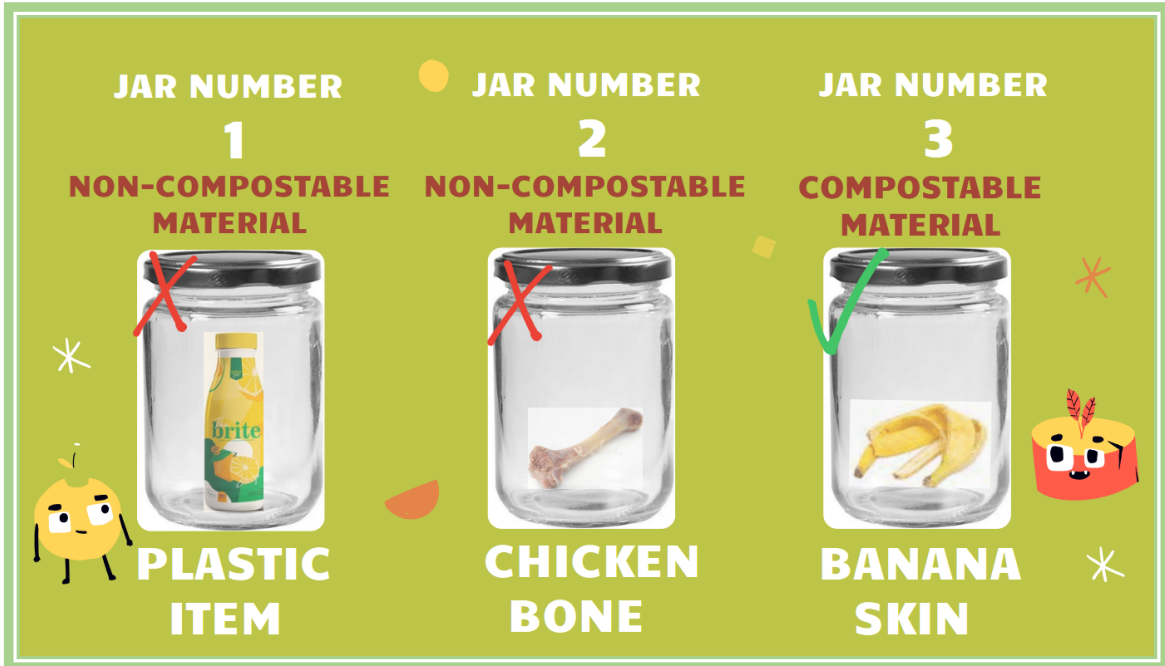
Class 2.- Mini composter.

Theory: Degradation process & compostable materials.

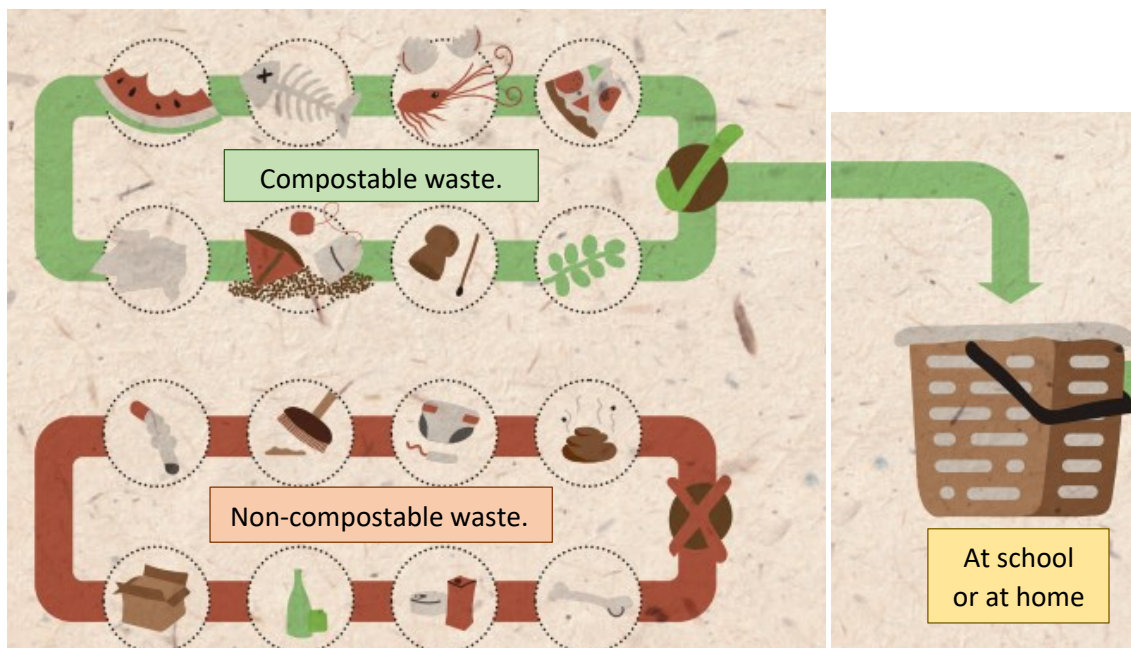
Check the jars experiment and what it means (degradation process).

-Did you see any change in the materials?

Let them speak.



Amplify the knowledge about what material is compostable and non-compostable.



- As you already have your rest of food perfectly separated, now we are going to experiment.

- Now we are going to do our own compost! For this let's see the following video.

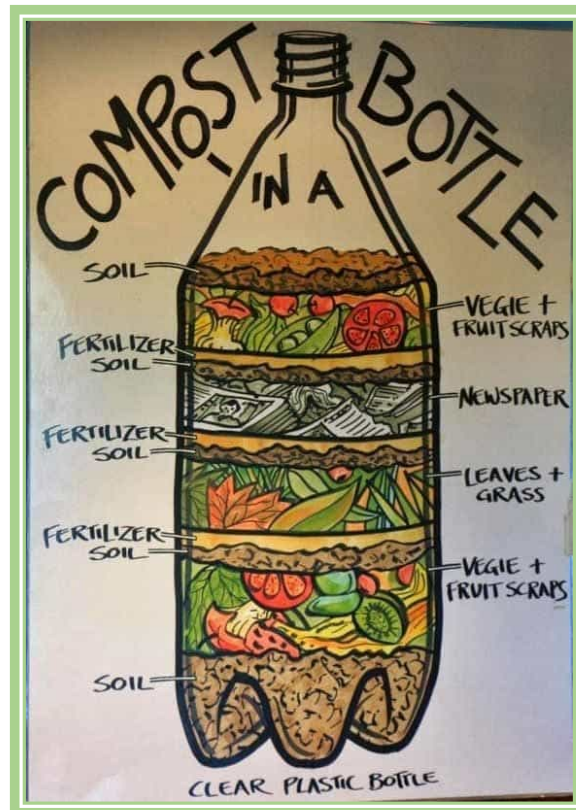
Hand craft: Mini composter.

Video 3 minutes.



<https://www.youtube.com/watch?v=kA3q07paNbE>

Show the students an already finished model with decomposing matter and make groups of 4 with them to put their names in the mini composters. Teacher will show pupils a picture of “compost in a bottle” so kids can see and follow a correct order of the materials.



Ask pupils to cut with their pair of scissors, in groups, newspaper and put it into biodegradable bag.



- Can you feel the difference texture between plastic bag and biodegradable bag?
- Take your biodegradable bag, fill it with newspaper and go down to the garden!

Gardening 1: First contact & Mini composter filling.

Steps:

1. We will go with our mini composters to the garden.
2. Recognise garden tools:



3. Recognise compost elements which the pupils will need to fill their mini composter.



Photograph 1. Dead leaves



Photograph 2. Compostable organic matter



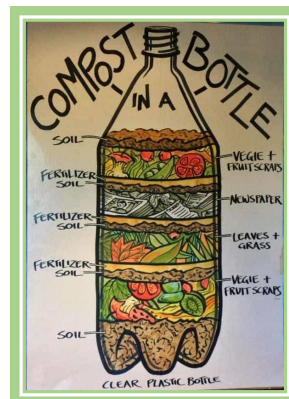
Photograph 3. Soil



Photography 1. Cut newspaper.

4. Fill the mini composters with the materials in the correct order.

Using a picture of “compost in a bottle” as a reference.



5. Watered mini composters using a watering can.
6. Ask kids.

-Do you think everything is done? Or is something missing?

-The decomposers are missing!

-Let's add red worms to our mini composters. Be gentle with this animal because is fragile and very valuable.



We will put a couple of red worms in each composter.

7. Left Mini composters in a place between sun and shade in the garden.

It would be ideal that during the following week the teacher would take the students to the garden to water their mini composters. At least once. For students to understand how important water is to compost.

Class 3.- Composting in real life.

At the European level, it is expected that by the year 2030 all countries belonging to the European Union will compost their organic matter waste. In the future, all citizens will be required to separate their organic waste in biodegradable bags, which will end up in a brown container that in turn will end up in a composting plant at the municipal level.

In this way, Mayco's pupils will be learning how to do it before it times arrived. This last activity tries to make pupils understand that the work they already do individually is part of a collective work (community work).

Video: How to compost at your school.

- Do you remember what we were talking about last week about composting?

-Do you remember your mini composters? Have you watered them?




Let them speak.

-Well now we are going to watch a video to refresh and add more information about composting!



<https://www.youtube.com/watch?v=dRXNo7leky8>

Interesting minutes of the video:

-  **Beginning** / How to compost at your school / 1. review what is compost / **01:01.**
-  **02:47** / 3. Where do you put your food scraps? / **03:16.**
-  **04:46** / 3. What happens to the food scraps once they leave the school? / **05:11.**

Show the scheme of what to do with food scraps (Composting process).

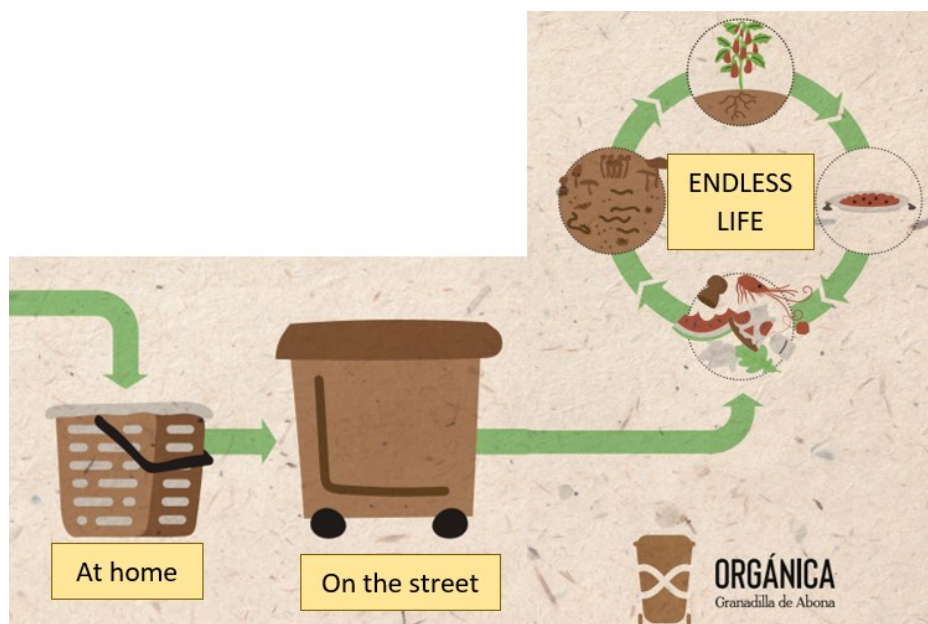


This scheme is guide by the following information:

In town:

-This happens in many places on the planet, in some towns in the United Kingdom and some towns in Spain. But unfortunately, it does not happen here in Tenerife! It is sad, isn't?

-At the moment only community composting is carried out in Granadilla de Abona.



At School:

- Until its problem is solved, if we want to help the environment, we must make our own compost. As we are doing with our mini composters! We are going to follow the same steps as in the towns.

1. We are going to put all mini composters into a bigger composter in which the compost will be formed.
2. Finally, we will be able to feed our garden.

Theory: How a composter works.

- Do you know how a real composter works? In the same way as your mini composter!

Explain the parts of the composter in a diagram.



- Okay, now let's go to the garden to work.

Gardening 2: Compost at Mayco school of English.

Students will go down to the garden to see the results of the organic matter degradation process. Then pupils will be able to observe what has happened.

After that, one by one, each group dumps their mini composter into the real composter.

-We must let it rest for a couple of weeks and water it at least once a week to finally be able to collect the compost.

When everyone finishes the teacher reviews the parts of the composter and finally opens the door at the base of the composter and takes out some compost that lets the children see.

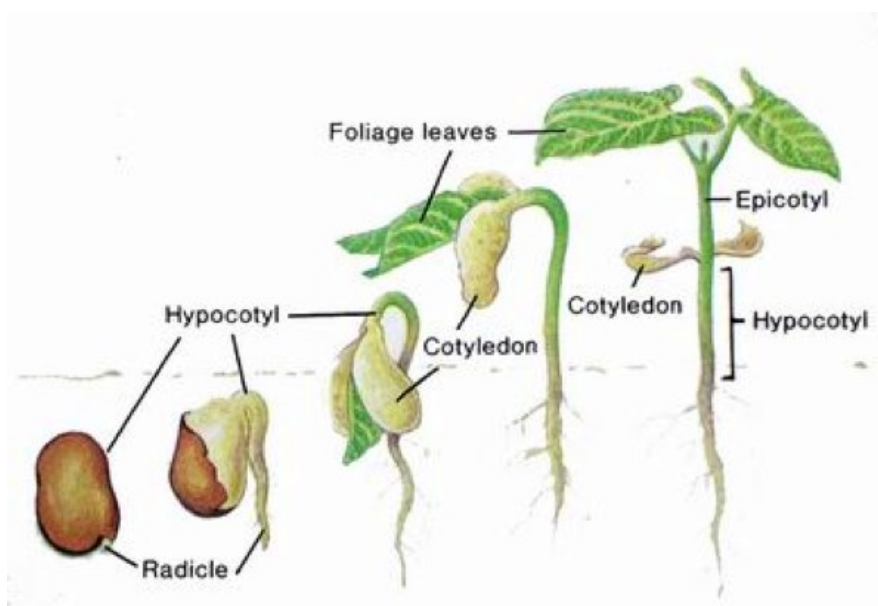
-But as I already knew that you were coming today, 2 weeks ago I started to make some compost, so let's feed our garden!

The teacher asks pupils to put on their gloves and feed the garden. The garden will be previously delimited.

Finally, the students are asked to water the garden in groups. (half shower per group).



At the end of the activity, the students in groups will plant a bean seeds and fertilize it with their compost. They will be able to see its growth from their class.



Class 4.- Satisfaction survey.

This survey is designed to cover all the knowledge that students should have acquired during the 3 carried out classes. With this mechanism, it is easy to know which students have been aware of the activity and have also been able to retain the knowledge acquired. It can also be observed in which topics the students need greater emphasis on, or what is the same, questions in which a high percentage of the class fails.

Class course:

- The satisfaction survey will be carried out with iPads to avoid wasting paper (Eco-friendly system).
- Student from 1st grade of primary will carry out the survey guided by the teacher, while 2nd-year students will do it on their own.

Satisfaction survey:

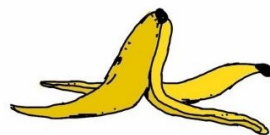
1. Make a circle around the correct answer. Why does compost help the environment?

a) Because this is how we produce renewable energies.

b) Because we feed plants with the leftover food that we don't want to eat anymore.

c) Because we help garbage to smell better.

2. Make a circle around the compostable elements and cross out the noncompostable elements:



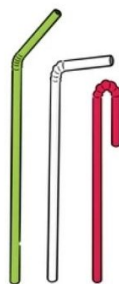
**BANANA
PEEL**



**CHICKEN
BONE**



**DEAD
LEAVES**



**PLASTIC
STRAW**



**BOTTLE
GLASS**



NEWSPAPER

-Yes: banana peel, dead leaves, newspaper.

-No: bottle glass, chicken bone, plastic straw.

3. Make a circle around the 6 elements that we need to make our own compost:



**PLASTIC
BOTTLE**



CARDBOARD



SALT



**DEAD
LEAVES**



BATTERY



FOOD SCRAPS



SOIL



WATER



**DOG
POOP**



RED WORMS



**ALUMINIUM
FOIL**

-Yes: Plastic bottle, soil, dead leaves, food scraps, water, red worms.

-No: Salt, cardboard, aluminium foil, a battery, and dog poop.

4. Make a circle around the place where the compost is already formed in this composter.



5. Make a circle around the correct answer. What do we do once we have the compost ready?

a) We throw it to the normal Bin.

b) We eat it.

c) We feed the garden.

6. What did you like the most about this activity?

You can choose one or more options.

a) Go out to the garden

b) Help the environment

c) Help plants grow big and strong

d) Learn new things

e) Catch red worms

More: _____

7. Would you like to compost at your home? Yes / Maybe / No

8. Would you like to do more activities in the garden? Yes / Maybe / No

Possible future activities.

The idea is that two or three weeks later the students can go down to the garden and see their own compost already formed and can feed (fertilize) again the garden with it. Being aware of the continuous cycle of organic matter in the form of compost.

This activity can open the curiosity of the children towards the work of the field such as agriculture, being able to consider the idea of creating a school garden in the future.



RESULTS & EVALUATION OF THE RESULTS

Class 1 results & evaluation of the results: Composting Mind Map.

Here only the most representative of the results obtained will be collected.

Learning process:



Illustration 2.- Learning process Class 1 with 1º.



Illustration 3.- Learning process Class 1 with 2º.

The first-grade students had never worked with the "ppoplet" app, so we needed a very guided class to achieve the expected results.

The class was a bit short on time and some students were unable to finish their mind maps.

Only in one of the first grades (first B) we could carry out the mind map.

Results of groups A and B of 1st grade of primary in Class 1:

Learning results:

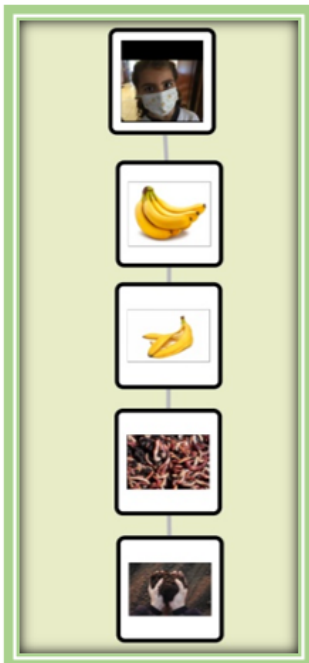


Illustration 4.- Class 1. Student 1 of 1st grade.

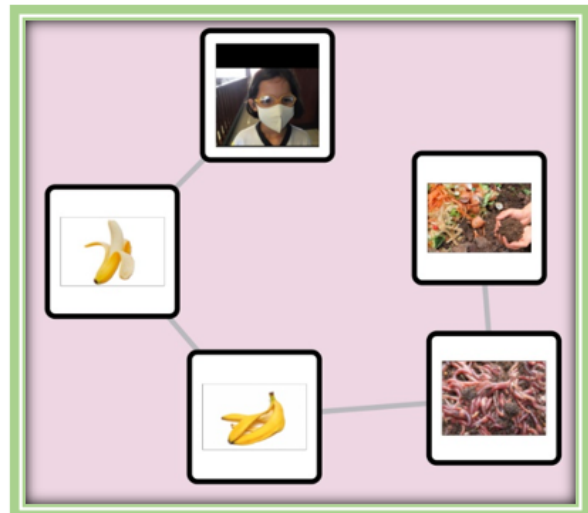


Illustration 5.- Class 1. Student 2 of 1st grade.

Evaluation of the results:

In the results obtained by the first-grade group B, it can be seen that they have clear ideas about the compost formation process, although it is not entirely clear if they understand the functionality of the compost or if it is just that they did not have enough time to finish the mind map.

In the case of student number 1, we can see that she has understood the process of compost formation, but she may not have understood that it is a cyclical process.

In other hand, student number 2 has left the idea of cyclicity represented by her mind map. Which can indicate to the teacher that she understands that composting is a cyclical process.

Both students have made a good mind map, so it is understood that they have actively participated in the activity.

Results of groups A and B of 2nd grade of primary in Class 1:

Here we see the results of two students from the same class.

Learning results:

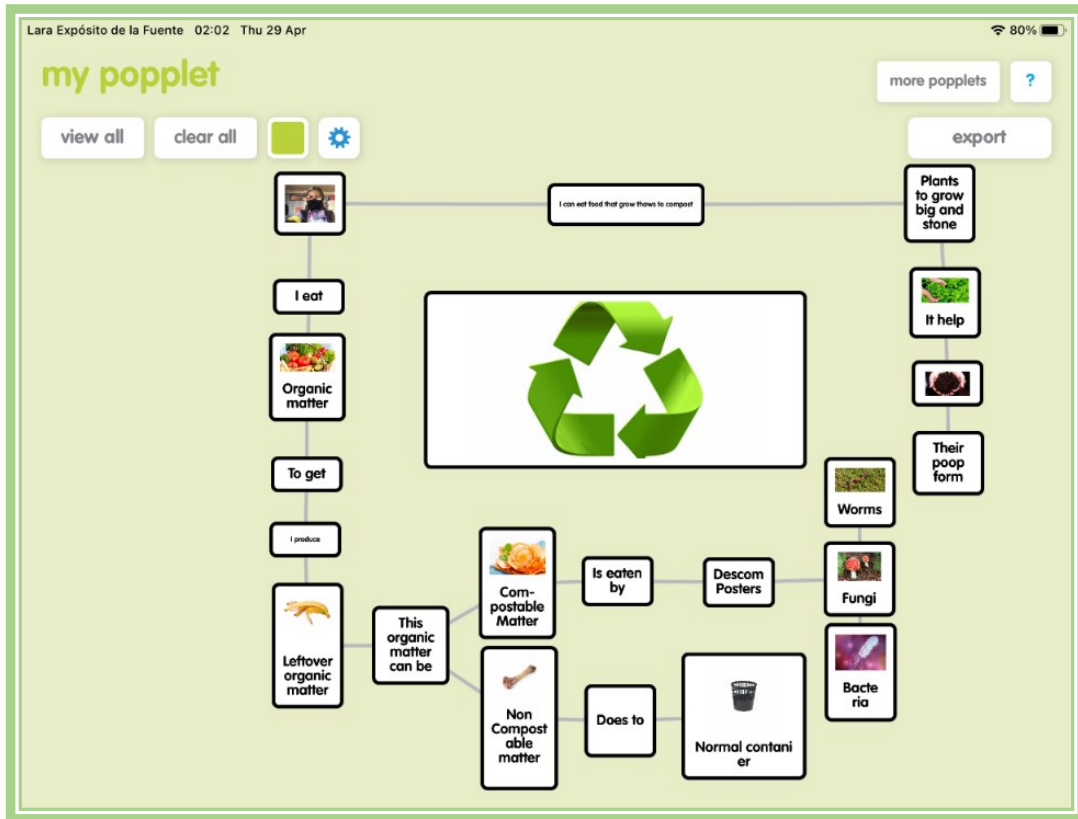


Illustration 4.- Class 1. Student 1 of 2nd grade.

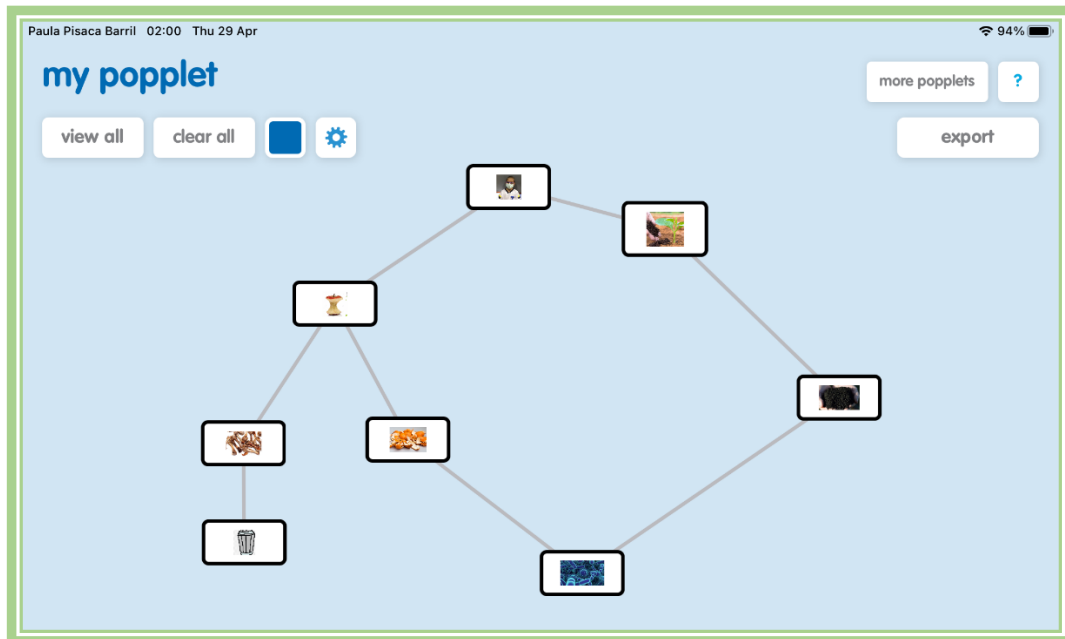


Illustration 5.- Class 1. Student 2 of 2nd grade.

Evaluation of the results:

It can be assessed how both have understood the concept and know what the compost formation process is and its purpose. At the same time can be valued the creativity of the student and their dedication.

On one hand, student 1 of the 2nd grade of primary has represented not only the images but also the written content, it could be said that he/she has dedicated more time or a higher quality time to the activity, or also that he/she has better handling with this kind of apps.

On the other hand, student 2 of 2nd grade shows with his/her design that he/she understands the entire process, but it is difficult to conclude that the name of each procedure is known and what happens in each part. To be able to identify if student 2 has been a bit lazy or if it is simply clarified better only with pictures, it would be necessary to study his/her behaviour in the classroom and if it were necessary to ask him/her something related in the next class.

Class 2 results & evaluation of the results: Mini composter.

Here only the most representative of the results obtained will be collected.

Learning process:



Illustration 8.- Class 2. The empirical discovery of the degradation process. 1ªA.



Illustration 9.- Class 2. The empirical discovery of the degradation process. 2ªB.



Illustration 10.- Class 2. 1ª A working in the garden.



Illustration 11.- Class 2. 1ª B working in the garden.

The time used for the development of the activity was adequate as well as the reception of the activity by the students and teachers. The students had not left their classes all year long and they were very grateful for the change of air.

Results of groups A and B of 1st grade of primary in Class 2:

Learning outcomes:



Illustration 6.- Class 2. 1º A results.



Illustration 7.- Class 2. 1º B results.

Evaluation of the results:

The students in groups filled their mini composters in the order indicated, watered them, and added the red worms. All composters were checked to have all the necessary components.

The quality of the composter could be evaluated (some composters have the elements in a different order rather than the correct one or not in the correct percentage), but the important thing is that all the members of the group participated actively in its realization.

Results of groups A and B of 2nd grade of primary in Class 2:

Learning outcomes:



Illustration 8.- Class 2. 2º A results.



Illustration 9.- Class 2. 2º B results

Evaluation of the results:

The second-grade students worked in a more organized and conscious way. As a result, very well finished mini composters were obtained. With the elements in order and in a suitable proportion.

Class 3 results & evaluation of the results: Composting in real life.

Here only the most representative of the results obtained will be collected.

Learning process:



Illustration 10.- Class 3. 1º A Filling the composter in the garden.



Illustration 11.- Class 3. 1º B Planting a bean in a pot filled with soil and compost.



Illustration 12.-Class 3. 2º A Filling the composter in the garden.



Illustration 13.-Class 3. 2º B Working the field in the garden.

The students drop the contents of their mini composters into a real composter, covered the contents of the mini composters with soil, and then added dead leaves. Finally, they covered everything with another layer of soil and added water to the real composter.

The teacher showed the students a finished compost bucket and asked them to work with a hoe and a rake to mix the compost with the garden soil.

Finally, the students were asked to fill one pot per group and plant two bean seeds in it. The students watered the pots with the seeds and went back to the classroom.

Results of groups A and B of 1st grade of primary in Class 3:

Learning outcomes:



Illustration 10.-Class 3. Results of 1st grade.



Illustration 11.- Class 3. Results of 1st grade.

Evaluation of the results:

The composter broke and had to be fixed with transparent adhesive tape. This fact did not prevent the children from inserting into it the necessary elements to make the compost, in their proper order.

The rest of the class developed normally.

Both groups, A and B, took 4 pots with soil, compost, and two beans for each one to their classrooms.

In this way, the composting circle is closed. The students have received the fruits of their work in the form of seeds that they must wait to see grow.

They are looking at the ultimate reason for the composting process, which is to feed plants with the remains of food that they no longer want to eat.

To finish this class, it was intended to carry out the "Satisfaction Survey", but it was considered unfeasible because of the time.

Results of groups A and B of 2nd grade of primary in Class 3:

Learning outcomes:



Illustration 12.-Class 3. Results of 2nd grade.



Illustration 13.- Class 3. Results of 2nd grade.

Evaluation of the results:

The 2nd graders finished filling the composter with the appropriate materials in their correct order. Then, in pairs, they fertilized the garden with a compost sample already formed, using a hoe and a rake. Finally, they planted the seeds and took them to the classroom.

The only incidence of the activity was that it started to rain (kind of rain: "chipichipi"). But the rain did not prevent the normal course of the activity.

The students learned about working in the fields and about the cyclicity of composting.

Class 4 results & evaluation of the results: Satisfaction survey.

Here only the most representative of the results obtained will be collected.

Learning process:

The session is carried out as a conventional class but making use of TICs to stimulate the session.

Results of groups A and B of 1st grade of primary in Class 4:

Learning outcomes:

Satisfaction survey:

1. Make a circle around the correct answer. Why does compost help the environment?

a) Because this is how we produce renewable energies.
b) Because we feed plants with the leftover food that we don't want to eat anymore.
 c) Because we help garbage to smell better.

2. Make a circle around the compostable elements and cross out the non-compostable elements:

HUG

Illustration 14.- Class 4 in 1º. Page 1 of the survey. Student 1.

3. Make a circle around the 6 elements that we need to make our own compost:

4. Make a circle around the place where the compost is already formed in this composter:

HUGOS

Illustration 15.- Class 4 in 1º. Page 2 of the survey. Student 1.

5. Make a circle around the correct answer. What do we do once we have the compost ready?

a) We throw it to the normal Bin.
 b) We eat it.
c) We feed the garden.

6. What did you like the most about this activity?
 You can choose one or more options.

a) ~~Go out to the garden~~
b) Help the environment
c) Help plants grow big and strong
 d) ~~Learn new things~~
 e) ~~Catch red worms~~

More: _____

7. Would you like to compost at your home? ~~Yes~~ / Maybe / No

8. Would you like to do more activities in the garden? ~~Yes~~ / Maybe / No

Hugo

Illustration 16.- Class 4 in 1º. Page 3 of the survey. Student 1.

COMPOSTING MAYCO SCHOOL OF ENGLISH

MIRIAM ALMENARA RAMOS
MASTER CLIL

Satisfaction survey:

1. Make a circle around the correct answer. Why does compost help the environment?

a) Because this is how we produce renewable energies.
b) Because we feed plants with the leftover food that we don't want to eat anymore.
 c) Because we help garbage to smell better.

2. Make a circle around the compostable elements and cross out the non-compostable elements:

illustration 17.- Class 4 in 1º. Page 1 of the survey. Student 2.

COMPOSTING MAYCO SCHOOL OF ENGLISH

MIRIAM ALMENARA RAMOS
MASTER CLIL

3. Make a circle around the 6 elements that we need to make our own compost:

4. Make a circle around the place where the compost is already formed in this composter:

illustration 18.- Class 4 in 1º. Page 2 of the survey. Student 2.

5. Make a circle around the correct answer. What do we do once we have the compost ready?

a) We throw it to the normal Bin.
 b) We eat it.
c) We feed the garden.

6. What did you like the most about this activity?
 You can choose one or more options.

a) Go out to the garden
 b) Help the environment
c) Help plants grow big and strong
d) Learn new things
 e) Catch red worms

More: _____

7. Would you like to compost at your home? Yes / Maybe / No

8. Would you like to do more activities in the garden? Yes / Maybe / No

Illustration 19.- Class 4 in 1º. Page 3 of the survey. Student 2.

Evaluation of the results:

The activity was guided by the teacher since first-grade students have not yet mastered autonomous reading and writing in English.

The teacher reads and explains the activities before asking the group for the answer. Also encourages their critical thinking and teamwork by letting them think about what they think is the correct answer and why.

After reaching a common answer, the teacher asks students to represent it themselves in the exercise through the image editor on their iPads.

Exercise number 1: Most of the students got the functionality of making compost right, which is the option b), but thanks to the second part of the exercise (letting them select the correct option in their virtual paper) it can be observed that Student 2 thinks that making compost can also produce renewable energy.

Only 2 students in the class had this exercise incorrect.

Exercise number 2: The students started rounding the answer without been necessary to finish the teacher's explanation of the exercise. The only material they had doubts about was the chicken bone, until one of their classmates mentioned the three jars that were still in the class (from the first class). In any case, as can be seen in the answer of student 2, some pupils were not quite sure about it.

Exercise number 3: The students did it without difficulties. An observation, the question should be changed so that the students are not confused and know that the teacher is referring to the Mini composters.

Exercise number 4: It was quite a confusing exercise for the students. The students understand compost as the set of elements that are needed to form it, not as a kind of soil. As it was a very common error, it is understood that the error is not in the student, but the teacher's explanation. It is concluded that is needed a greater emphasis on clarifying this concept so that students know how to differentiate between "process" and "result".

Exercise number 5: It was answered without any difficulty.

Exercise number 6: The first-year students, as they do not know yet how to write in English, only underlined the proposed options that they liked the most. All the students highlighted more than two options, which indicates an acceptance and satisfaction raised towards the activity.

Exercise number 7: Most of the students marked "Yes", some commented that their mother would not let them do it at home.

The answer to this by the teacher was: << If your mother doesn't leave you do compost at home, it doesn't mean that you wouldn't like to do it. So, if you would like to compost at home even if you can't do it you can make a circle around " Yes ">>

Exercise number 8: All students marked "Yes".

Finally, the teacher solved all the exercises, so that the students could correct their mistakes and ask questions.

Results of groups A and B of 2nd grade of primary in Class 4:

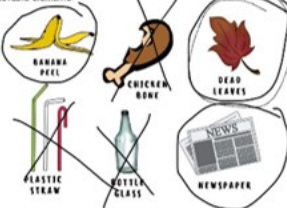
Learning outcomes:

Satisfaction survey:

1. Make a circle around the correct answer. Why does compost help the environment?

a) Because this is how we produce renewable energies.
b) Because we feed plants with the leftover food that we don't want to eat anymore.
 c) Because we help garbage to smell better.

2. Make a circle around the compostable elements and cross out the non-compostable elements:



Celi

Illustration 30.- Class 4. Page 1 of the survey. Student 1.

3. Make a circle around the 6 elements that we need to make our own compost:



4. Make a circle around the place where the compost is already formed in this composter.



Celi

Illustration 31.- Class 4. Page 2 of the survey. Student 1.

5. Make a circle around the correct answer. What do we do once we have the compost ready?

a) We throw it to the normal Bin.
b) We eat it.
 c) We feed the garden.

6. What did you like the most about this activity?
 You can choose one or more options.

a) Go out to the garden.
b) Help the environment
c) Help plants grow big and strong
 d) Learn new things
 e) Catch red worms

More: I love to take compost

7. Would you like to compost at your home? Yes / Maybe / No

8. Would you like to do more activities in the garden? Yes / Maybe / No

Celi

Illustration 32.- Class 4. Page 3 of the survey. Student 1.

COMPOSTING MAYCO SCHOOL OF ENGLISH

MIRIAM ALMEQUARA RAMOS
MASTER CLIL

Satisfaction survey:

1. Make a circle around the correct answer. Why does compost help the environment?

a) Because this is how we produce renewable energies.
b) Because we feed plants with the leftover food that we don't want to eat anymore.
 c) Because we help garbage to smell better.

2. Make a circle around the compostable elements and cross out the non-compostable elements:




Illustration 33.- Class 4. Page 1 of the survey. Student 2.

COMPOSTING MAYCO SCHOOL OF ENGLISH

MIRIAM ALMEQUARA RAMOS
MASTER CLIL

3. Make a circle around the 6 elements that we need to make our own compost:



4. Make a circle around the place where the compost is already formed in this composter.



Illustration 34.- Class 4. Page 2 of the survey. Student 2.

5. Make a circle around the correct answer. What do we do once we have the compost ready?

a) We throw it to the normal Bin.
b) We eat it.
c) We feed the garden.

6. What did you like the most about this activity?
 You can choose one or more options.

a) Go out to the garden.
b) Help the environment
c) Help plants grow big and strong
 d) Learn new things
 e) Catch red worms

More: touch the full scraps

7. Would you like to compost at your home? Yes / Maybe / No

8. Would you like to do more activities in the garden? Yes / Maybe / No

Illustration 35.- Class 4. Page 3 of the survey. Student 2.

Evaluation of the results:

The students read aloud the sentences of the exercises. And then they solved them. In this case, the teacher resolved possible doubts.

Exercise number 1: All the students except one answered the correct option, option b).

Exercise number 2: All students rounded the correct options. There was also some doubt about the chicken bone, and it was resolved by the three jars method.

Exercise number 3: All students rounded the correct options.

Exercise number 4: As with the first-grade classes, it was a confusing exercise for most of the students. An error is ratified at the teaching level, not at the learning level.

Exercise number 5: All students answered the correct option, option c).

Exercise number 6: Many students, in addition to underlining the favourite answers, also wrote one more. Thanks to this new response, the teacher can see more things that caught the attention of the students, in addition to checking the quality of their writing. Student number 2 writes "full scrapt" instead of "food scraps", which indicates that the students are learning through what they hear. They write the words as it sounds.

Exercise number 7: The same doubt appeared in one of the second-year classes, in which a student said that his mother would not let him do it at home. The teacher's answer was the same as for the first class: << If your mother doesn't leave you do compost at home, it doesn't mean that you wouldn't like to do it. So, if you would like to compost at home even if you can't do it you can make a circle around " Yes ">>

Exercise number 8: All students marked "Yes".

Finally, the teacher solved all the exercises, so that the students could correct their mistakes and ask questions.

ASSESSMENT OF THE PROJECT

This section deals with the acceptance and the success of the project "Composting".

ACCEPTANCE OF THE PROJECT

The satisfaction survey gives an idea of the level of satisfaction of the students towards the "Composting" project. The results of the satisfaction survey indicated that:

- 95% of the students liked more than 4 points of the project (caring for the environment, catch red worms, etc.)
- 93% of the students would like to repeat the experiment in their homes.
- 100% of the students would like to do more activities in the garden.

These data indicate high satisfaction with the "Composting" project on the part of the students. On the one hand, the families were informed about the activity and several parents expressed their interest. What is more, one of the parents offered to collaborate directly on the project.

On the other hand, the teachers showed their verbal satisfaction and through active participation.

SUCCESS OF THE PROJECT

The success of a school garden's project understood as the probability that the project will be developed again the following year, can be measured through the following points: participation factors, organizational factors, coordination factors, educational factors, agricultural factors, and factors on the space dedicated to the school garden.

Participation factors

Refers to the number of groups involved in the garden; management team, teaching team, families, students, neighbours, and exchange with other centers. The greater the participation, the greater the probability that the project will last over time.

To evaluate this point, one point will be awarded for each covered field:

- 1 point if the project has achieved the participation of the management team.
- 1 point if the project has achieved the participation of the teaching team.
- 1 point if the project has achieved the participation of the families.
- 1 point if the project has achieved the participation of the students.
- 1 point if the project has achieved the participation of the neighbours.
- 1 point if the project has achieved the participation of the exchange with other centers.

The "Composting" project has achieved participation of 4 out of 6, which in percentages is approximately 67% of participation.

Organizational factors:

Refers to the organization model of the activities around the garden if extracurricular activities are carried out in it or integrated into the curriculum. It is also observed if the school had the help of a teacher who does not belong to the center and specialized in the subject. It represents an additional commitment on the part of the center and an improvement in the content to be taught.

To evaluate this point, one point will be awarded for each covered field:

- 1 point if the project has been carried out in an integrated way in the curriculum.
- 1 point if external educators have been required to carry out the project.

This section is difficult to evaluate because both fields have been covered, the project has been carried out integrated into the curriculum, and the school has had an external teacher specialized in the subject. In this way, the "Composting" project would have achieved participation of 2 points out of 2, which in percentages is 100% organizational. Anyways it should be noted that both circumstances were not the center's own decision but could be said to have been given by the situation.

Coordination factors:

Refers to the existence of a motor group or an orchard commission, which carries out a division of tasks and a forecast against possible problems.

To evaluate this point, one point will be awarded for each covered field:

- 1 point if the "Composting" project has had an orchard commission to manage it.

In this way, the "Composting" project would have achieved coordination of 0 out of 1, which in percentages is 0% Coordination factors.

Educational factors

Refers to the use of the garden as an educational/pedagogical tool for the work of different contents, both curricular and transversal. The teaching team must be available to everyone, not just one subject.

To evaluate this point, one point will be awarded for each field covered:

- 1 point if the "Composting" project has functioned as an educational/pedagogical tool.
- 1 point if the "Composting" project has been available to the entire teaching team.

In this way, the "Composting" project would have achieved educational factors of 2 out of 2, which in percentages is 100% educational factors.

Agricultural factors:

Correspond directly to aspects related to the diversity of crops (vegetables from different seasons) and their maintenance (correct irrigation, fertilization, etc.).

To evaluate this point, one point will be awarded for each field covered:

- 1 point if the "Composting" project has had a diversity of crops.
- 1 point if the "Composting" project has been properly maintained.

In this way, the "Composting" project would have achieved agricultural factors of 2 out of 2, which in percentages is 100% of agricultural factors. This is because even though a great variety of plant species have not been cultivated through this project (because that was not the objective of it), all the expected objectives have been achieved (fertilizing the garden with compost) and good care of the garden has also been done.

Factors on the space dedicated to the school garden:

The situation of the garden into the school is evaluated (the school garden is located near/more or less close/far away from the area where the classes are taught), accessibility to the garden (very accessible, more or less accessible or not very accessible), its general care (very careful, more or less careful or not very careful) and the use of accompanying elements (advertising posters of the place, guides of plants planted in the garden, etc.).

To evaluate this point, one point will be awarded for each field covered:

Orchard situation:

- 1 point if the situation of the school garden into the school is close to the area where the classes are taught.
- 0.5 points if the situation of the school garden into the school is more or less close to the area where the classes are taught.
- 0 points if the situation of the school garden into the school is far from the area where the classes are taught.

Accessibility to the garden:

- 1 point if the school garden is accessible.
- 0.5 points if the school garden is more or less accessible.
- 0 points if the school garden is not very accessible.

General care:

- 1 point if the school garden is very well cared for.
- 0.5 points if the school garden is more or less cared for.
- 0 points if the school garden is poorly maintained.

Use of accompanying elements:

- 1 point if there are several accompanying elements.
- 0.5 points if there is an accompanying element.
- 0 points if there is no accompanying element.

In this way, the "Composting" project has achieved 3 out of 4 factors on the space dedicated to the school garden, which in percentages is 75% factors on the space dedicated to the school garden.

Breakdown of the points:

Orchard situation: 1 point.

Accessibility to the garden: 1 point.

General care: 1 point.

Use of accompanying elements: 0 points.

CONCLUSIONS

In a conclusion, a high satisfaction with the "Composting" project was achieved by students, teachers, and parents. Also, the percentage of success that the "Composting" project has had will be calculated, taking the assessable points explained in the previous section.

To evaluate these points, again one point will be awarded for each field covered:

1. Participation factors: 67%
2. Organizational factors: 100%
3. Coordination factors: 0%
4. Educational factors: 100%
5. Agricultural factors: 100%
6. Factors on the space dedicated to the school garden: 75%

Finally, is achieved an average of success of 74%, considering that this success refers to the probability that the project will be carried out again next school year.

This result indicates that the project will probably continue next year.

PERSONAL ASSESSMENT

I end the activity very pleased because I am sure that the students have learned something new about a topic that most of them had never heard about and the minority did not fully understand, a topic is useful for their lives and beneficial for the environment.

They have been directly involved in the performance of the activity and have undergone all the composting processes themselves.

It has been possible to demonstrate the range of this practical learning through projects through the final survey, where it can be seen that they dominate the base terms of compost. Its survey shows that learning has occurred and most importantly of all, a new attraction and emotion has also appeared towards the environment (the agricultural environment in this case).

As a section to improve I must place more emphasis on clarifying the difference between the concepts of "the process to make compost" and "the result of composting" which is compost.

In any case, I consider that the proposed objectives have been met in an instructive and funny way.

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ANNEXES

ANNEX I.- CORONAVIRUS-19 PRECAUTIONS

- ✚ After the classes, the students will wash their hands and disinfect them.
- ✚ The mini composters will be left to rest in a delimited, airy place away from the daily activity of the students.
- ✚ According to the latest studies, COVID-19 can remain active in organic matter for a maximum of 2 days. Therefore, the mini composters will be left to rest in this place for a minimum of 2 days without being manipulated by the students. The students could go to see them but without touching them.
- ✚ Once the compost is formed (after a minimum of one week) there would no longer be a risk of spreading the virus, anyway, the compost will be handled with gardening or plastic gloves.
- ✚ All the activities will be done under the supervision of an adult.

ANNEX II.- TOOLS









- ✚ Canva <https://www.canva.com/folder/all-designs>
- ✚ Grammarly <https://app.grammarly.com/ddocs/1127774490>
- ✚ Popplet <https://www.popplet.com/>
- ✚ Google photographs.
- ✚ Google questionnaire.
- ✚ Kahoot.

ANNEX III.- SUPPORT DOCUMENTS
















1. "PROYECTO EDUCATIVO MAYCO SCHOOL OF ENGLISH". Provided by the institution in PDF format. PEC.pdf
2. "NORMAS DE ORGANIZACIÓN Y FUNCIONAMIENTO DEL CPEIPS MAYCO". Provided by the institution in PDF format. NOF-2019-2020.pdf

ANNEX IV.- MATERIALS














Class 1: Composting.

-  iPads: one for the teacher and one for each pupil.
-  Projector.
-  Internet.
-  Popplet app already download in pupil's iPads.
-  Three jars.
-  Chicken bones.
-  Banana peel.
-  Plastic product.




Class 2: Mini composter.

-  iPads: just one for the teacher.
-  Projector.
-  Internet.
-  Plastic Water bottle (5 Litres).
-  Knife.
-  Pushpin.
-  Pair of scissors for each pupil.
-  Newspaper.
-  Biodegradable bag for each group.
-  Watering can.
-  Shovel.
-  Trowel.
-  Plastic bag.
-  Bag with dead leaves
-  Bucket with food scraps

Class 3: Composting in real life.

-  iPads: one for the teacher and one for each pupil.
-  Projector.
-  Internet.
-  Shovel.
-  Trowel.
-  Rake.
-  Watering can.
-  Bag with dead leaves.
-  Compost bucket.
-  Bean seeds.
-  Pots.
-  Mini composters.
-  Real composter.

Class 4: Satisfaction survey.

-  iPads: one for the teacher and one for each pupil.
-  Projector.
-  Internet.